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Abstract

PROBLEM TO BE SOLVED: To obtain a stable large emission current by applying enough voltage on each emitter.

SOLUTION: After a SiO₂ film 2 and a gate layer 3 formed on a silicon substrate 1 have been patterned, an Fe thin film 5 is formed by sputtering and Fe dots 6 are formed simultaneously on the exposed surface of the silicon substrate 1. While a magnetic field is applied using an electromagnet 7 on the Fe dots 6 in the perpendicular direction to the silicon substrate 1 to attract the Fe dots 6, carbon nanotubes 8 are selectively grown between the Fe dots 6 and the silicon substrate 1 to form emitter electrodes.